

## IN THE CLAIMS

Please cancel claims 1 and 2 without prejudice and substitute therefore the following new claims 3-54. These new claims are set forth in **Attachment C** enclosed herewith.

## REMARKS

Applicant wishes to thank the Examiner for the courteous interview granted to the Applicant, Mr. Haile-mariam, and Applicant's attorney, Marvin Petry, on July 30, 2001. The reasons set forth at the interview as warranting favorable action are set forth below.

Although not specifically discussed at the interview, Applicant is submitting herewith a Substitute Specification and new drawings. These are intended to better describe the invention. Enclosed is a Statement signed by the inventor confirming his belief that no new matter is included in this substitute specification or the new drawings.

The original claims have been canceled and replaced by new claims 3-54. These include independent claim 3 with its dependent claims 4-13, independent claim 14 with its dependent claims 15-23, independent claim 24 with its dependent claims 25-29, independent claim 30 with its dependent claims 31-35, independent claim 36 with its dependent claims 37-45 and independent claim 43 with its dependent claims 44-54.

Enclosed herewith is an Information Disclosure Statement citing two new references which are discussed in these remarks and citation of which is respectfully requested.

The projection monitor system of the invention has two important dimensions. From prospective, the invention has several inherent superior technical advantages like:

having the means to create a large image size in a spatially confined space; and having the means to provide a new degree of freedom in varying or increasing screen sizes. From another prospective, the invention principally reduces eyestrain occasioned by the extensive use of computers.

The projection monitor of the invention is designed for use with personal workspaces. A personal workspace is defined as having a first location for an operator. From the first location, an operator has convenient control access to the computer system including either the computer or the Desktop Projector. A typical computer system could be composed of a computer, Desktop Projector, and a keyboard. The computer operates via wire-connected keyboard, wireless keyboard, mouse or other control instrument. After the initial configuration, the Desktop Projector operates primarily through the projector controls on the unit or via a remote control device or other control instrument. The Desktop Projector primary operation controls such as varying the screen size or brightness may be configured to operate through some computers. The personal workspace does have a spatially confined area, with a minimum delimitation created by the reflective screen. The screen is positioned or designed to provide a reflective surface toward the first location.

In contrast, conference rooms or auditoriums are not personal workspaces. The screen is positioned and designed to provide a reflective surface towards the multiple viewer locations of the audience. Each of these multiple viewer locations does not have any operator access. In addition to the multiple viewer locations, there may be a first location for an operator in this presentation space. However, the first location within the presentation space does not have a screen customized or directed toward the first

location of the computer operator. Commonly, the first location of the computer operator in a presentation space is the presenter himself. The presenter is positioned to face the viewers as he/her operates the computer system and typically does not receive the computer image being reflected towards the audience. Conference rooms or auditoriums have no delimitations or sense of confined space from other viewers to create a personal workspace as designed for their intended purpose.

The projection monitor of the invention, with two main implementations, integrates two or three of these components into a personal workspace: a projector; a separate reflective screen; and preferably an adjustable arm. In the basic implementation, the projection and reflective screen are used in combination with a personal workspace as a method of creating a projection monitor, as an eyestrain reduction method of operating a computer system, and as a projection monitor system. With the adjustable arm implementation, the projector, reflective screen and adjustable arm are used in combination with a personal workspace as another method of creating a projection monitor, as another eyestrain reduction method of operating a computer system, and as another projection monitor system. The key aspects of the invention concisely summarized in these six independent claims is not taught in any prior art.

The Gale et al. U.S. patent No. 5,692,820, which is cited in the Office Action, is a rear-projection personal display, as opposed to a front projection system like the current invention. A projector housed inside a monitor enclosure produces a computer image that is guided along an optical path by at least one mirror towards a transparent screen connected to the monitor enclosure. Unlike the current invention, Gale's patent requires an optical system consisting of at least one mirror to bend the optical path of the image,

partly for compactness. The projection monitor of the invention uses a reflective screen and not a transparent screen like Gale's invention. The nature of Gale's patent constrains the means of varying the image size to that of the screen. With the current invention, the screen could be the wall providing a much greater degree of freedom in varying the image size, which essentially becomes the screen size. The invention with either main implementation would take considerably less or almost no desk space for a given large image size compared to Gale's patent. With the knowledge of Gale's patent, a person of ordinary skill in the art would not find it obvious to create a projection monitor composed of a front projector and an reflective screen, preferably unconnected directly to projector or its supporting adjustable arm, from a rear-projection system enclosed with a transparent screen.

In addition, the inventors of Projection Monitor did not recognize the fact, this invention does conform to the design principles taught by the Computer Eyestrain Theory. The inventors were positioning this display primarily in terms of the technological advantages of producing a larger computer screen in a smaller package, e.g., suitable for desktop use.

There are two other patents presenting different projection monitor systems further confirming that it is not obvious for one skilled in the art to create a superior projection monitor that uses a front projector with a reflective screen, preferably unconnected directly to projector or its supporting adjustable arm, providing the means to cost effectively create a large computer image size, and the means increase the size of the screen, while taking considerable less desk space, at a manufacturing cost advantage. McNelley's U.S. Patent No. 5,639,151 titled "Pass-Through Reflective

Display," and Fergason's U.S. Patent No. 5,629,806 titled "Retro-reflector Based Private Viewing System," can both be configured as projection monitor systems that use a projection system, with a connected optical system, and a connected beamsplitter acting as the final semi-reflective screen. The connected optical system helps to direct the computer image along the desired optical path, while increasing the size of the final image at the screen, at the expense of adding size and cost to the display. The current invention does not have a connected optical system outside of the projector to direct the computer image toward the reflective screen reducing cost and physical display size. In addition, the current invention is not constrained by a screen encasement providing support to the projection system as well that would otherwise limit the ability of the projection monitor to create a large image size or to vary the screen size.

McNelley et al. did not recognize that their invention conformed to the design principles taught by the inventor's Computer Eyestrain Theory. The light carrying the computer image travels a longer distance and experience reflection in the optical path to the eyes. They did recognize that their display invention helped eyestrain associated with computer monitors by providing sufficient distance between the observer and a larger computer image than found in CRT monitors. However, this implies the optical distance and acuity related eyestrain, and not the distance the light wave travels from the light source to the operator's eyes. The McNelley et al. patent does not suggest or imply the inventor's Computer Eyestrain Theory.

Fergason did not recognize that their invention conformed to the design principles taught by the inventor's Computer Eyestrain Theory. Fergason teaches that it is the distance to which the image is viewed or appears to be located relative to the

viewer's eyes, that relieves eyestrain. According to Fergason, a comfortable viewing distance is about 20 inches or more. Again, this implies the optical distance and acuity related eyestrain, and not the distance the light wave travels from the light source to the operator's eyes. The Fergason's patent does not suggest or imply the inventor's Computer Eyestrain Theory. Computer Eyestrain Theory does not limit the invention.

Independent claim 3 recites the basic method implementation of the invention, the projector and reflective screen are used in combination with a personal workspace as a method of creating a projection monitor, with several advantages over prior art as described above. a method of creating a projection monitor for use in combination with a personal workspace, permitting an operator to view a computer image in a spatially confined area, comprising the steps of: arranging a personal workspace having a first operator location and spatially confined area; positioning a projector having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, within the personal workspace and in proximity to the first operator location; projecting a computer image from a projector and away from the first operator location toward the reflective screen within the personal workspace; and reflecting the computer image from the reflective screen toward the first operator location. This method of creating a projection monitor will enable creating a cost effective large computer image, and the ability to vary the image size, especially increase the size, by repositioning either the projector or reflective screen.

Independent claim 14 recites the adjustable arm method implementation of the invention, the projector, reflective screen, and adjustable arm are used in combination

with a personal workspace as another method of creating a projection monitor, with several advantages over prior art, as described above, and even the basic system. A method of creating a projection monitor for use in combination with a personal workspace, permitting an operator to view a computer image in a spatially confined area, comprising the steps of: arranging a personal workspace having a first operator location and a spatially confined area; connecting an adjustable arm to a planar work surface within the personal workspace in proximity to first operator location; mounting a projector having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, within the personal workspace onto the adjustable arm; projecting a computer image from the projector on the adjustable arm and away from the first operator location toward the reflective screen within the personal workspace; and reflecting the computer image from the reflective screen toward the first operator location. Beyond the basic system, the adjustable arm implementation provides additional flexibility in creating a large image size, at a desired closer distance, and a larger degree of freedom in increasing the image size of the monitor.

Independent claim 24 recites, a method of operating a computer system in a personal workspace, permitting an operator to view a computer image in a spatially confined area, in such a manner as to reduce eyestrain comprising the steps of: transmitting a display signal from a computer to a projector, having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, which is positioned in proximity to an operator in the personal workspace having a first operator location and a spatially

confined area; projecting the computer image from the projector and away from the operator toward a reflective screen within the personal workspace; and reflecting the computer image from the reflective screen toward the operator at the first operator location. The combined effect of an operator receiving only reflected light of the computer image over a distance, which is greater than the conventional distance of the light path of the computer image from a directly transmitting monitor to an operator, is to reduce eyestrain, while providing the ability for operator to create larger image sizes also helping to reduce eyestrain. This method of operating a computer system does not produce any electromagnetic radiation, which may also contribute to eyestrain.

Independent claim 30 recites a method of operating a computer system in a personal workspace, permitting an operator to view a computer image in a spatially confined area, in such a manner as to reduce eyestrain comprising the steps of: transmitting a display signal from a computer to a projector, having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, mounted on an adjustable arm connected to a planar work surface, which is positioned in proximity to an operator in the personal workspace having a first operator location and a spatially confined area; projecting the computer image from the projector on an adjustable arm and away from the operator toward a reflective screen within the personal workspace; and reflecting the computer image from the reflective screen to the operator at the first operator location. The combined effect of an operator receiving only reflected light of the computer image over a distance, which is greater than the conventional distance of the light path of the computer image from a directly transmitting monitor to an operator, is to reduce



eyestrain. The additional combined effect of the adjustable arm enhancing the ability for the operator to create larger image sizes, at a desired closer distance, while further increasing the light path distance of the computer image for a given size, is to also reduce eyestrain. This method of operating a computer system does not produce any electromagnetic radiation, which may contribute to eyestrain.

Independent claim 36 is based on the design principles of the inventor's Computer Eyestrain Theory. A projection monitor system for use in combination with a personal workspace, in which the system permits an operator to view a computer image in a spatially confined area, the system comprising: a personal workspace having a first operator location and spatially confined area; a projector having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, within the personal workspace, located in proximity to the first operator location, positioned to project a computer image away from the first operator location and towards the reflective screen; and a reflective screen, within the personal workspace, located to receive the computer image from the projector and reflect it towards the first operator location, wherein the path of the light carrying the computer image from the projector to the reflective surface and finally to the operator is greater than a conventional distance from a directly transmitting computer monitor to the operator.

Independent claim 45 is based on the design principles of the inventor's Computer Eyestrain Theory with the adjustable arm system implementation, a projection monitor system for use in combination with a personal workspace, in which the system permits an operator to view a computer image in a spatially confined area,

the system comprising: a personal workspace having a first operator location and a spatially confined area; an adjustable arm connected to the planar work surface within the personal workspace and positioned in proximity to the first operator location; a projector having at least one video input for accepting a display signal from a connected computer, capable of creating a projected computer image based on the display signal, within the personal workspace located on the adjustable arm to project a computer image away from the first operator location and toward the reflective screen; and a reflective screen within the personal workspace located to receive a computer image from the projector and reflect it towards the first operator location, wherein the path of the light carrying the computer image from the projector, located on the adjustable arm, to the reflective surface and finally to the operator is greater than a conventional distance from a directly transmitting computer monitor to the operator.

The prior art as cited and as discussed above clearly does not anticipate the present invention, as set forth in any of the independent claims. Moreover, the prior art cannot render these claims obvious under §103. In order to show obviousness, the gap between any known prior art and the claimed invention can be closed only if there exists in the prior art a suggestion or motivation for modifying the known prior art to arrive at the claimed invention. In the present instance, the prior art is completely devoid of any suggestion for modifying the known prior art to arrive at the present invention as set forth in any of the independent claims.

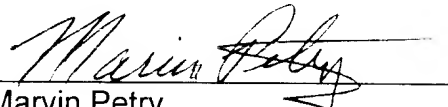
The objections to the drawings and the rejections to the claims under §112 are believed no longer applicable to the claims 3-54 nor to the new drawings.

In view of the above, it is respectfully submitted that this application is now in condition for allowance, which action is promptly and respectfully solicited.

Respectfully submitted,

Endale G. Haile-mariam

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Marvin Petry  
Registration No.

LARSON & TAYLOR PLC  
Transpotomac Plaza  
1199 North Fairfax Street, Suite 900  
Alexandria, Virginia 22314  
(703) 739-4900